**IN THE CLAIMS**

Claims 1-22 (Canceled)

23. (New) A magnetic apparatus comprising:

a perpendicular magnetic recording medium; and

a magnetic head including a recording element and a reproducing element,

wherein said magneto-resistance element has a first non-magnetic metal layer, a second non-magnetic metal layer, and a magneto-resistance effect film formed between the first non-magnetic metal layer and the second non-magnetic metal layer,

said magneto-resistance effect film includes a first ferromagnetic layer, a second ferromagnetic layer, and an intermediate insulating layer formed between the first ferromagnetic layer and the second ferromagnetic layer, and

said magneto-resistance effect film is arranged so that a tunnel current flows between the first ferromagnetic layer and the second ferromagnetic layer through the intermediate insulating layer.

24. (New) A magnetic apparatus according to claim 23, wherein a magnetization direction of said first ferromagnetic layer changes in the presence of a changing external magnetic field.

25. (New) A magnetic apparatus according to claim 23, wherein said perpendicular magnetic recording medium has a perpendicular magnetic recording layer comprising Co-Cr.

26. (New) A magnetic apparatus according to claim 23, wherein a coercive force of the first ferromagnetic layer is smaller than that of the second ferromagnetic layer.

27. (New) A magnetic apparatus comprising:

a perpendicular magnetic recording medium; and

a magnetic head including a recording element and a reproducing element,

wherein said magnetic-resistance element has a first non-magnetic metal layer, a second non-magnetic metal layer, and a magneto-resistance effect film formed between the first non-magnetic metal layer and the second non-magnetic metal layer,

said magneto-resistance effect film includes a first ferromagnetic layer, a second ferromagnetic layer, an intermediate insulating layer formed between the first ferromagnetic layer and the second ferromagnetic layer, and an anti-ferromagnetic layer formed between the second ferromagnetic layer and the second non-magnetic metal layer, and

said magneto-resistance effect film is arranged so that a tunnel current flows between the first ferromagnetic layer and the second ferromagnetic layer through the intermediate insulating layer.

28. (New) A magnetic apparatus according to claim 27, wherein a magnetization direction of said first ferromagnetic layer changes in the presence of a changing external magnetic field.

29. (New) A magnetic apparatus according to claim 27, wherein said perpendicular magnetic recording medium has a perpendicular magnetic recording layer comprising Co-Cr.

30. (New) A magnetic apparatus according to claim 27, wherein a magnetization direction of said second ferromagnetic

layer is fixed by the anti-ferromagnetic layer which applies a bias magnetic field to the second ferromagnetic layer.